

Houghton Mifflin Math Expressions
Grade 5
 correlated to
Illinois Mathematics Assessment Framework

Illinois Mathematics Assessment Framework	<i>Houghton Mifflin Math Expressions</i>
STATE GOAL 6: NUMBER SENSE	
Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.	
Calculators Allowed	
Standard 6A – Representations and Ordering	
Demonstrate knowledge and use of numbers and their representations in a broad range of theoretical and practical settings.	
Read, Write, and Represent Numbers	
6.5.01 Read, write, recognize, and model equivalent representations of whole numbers and their place values up to 100,000,000.	SAB: 105, 106, 111, 112, 125 TG: 184–185, 186–187, 189, 190, 192–195, 196, 217, 233 H/R: 51, 53
6.5.02 Read, write, recognize, model, and interpret numerical expressions from a given description or situation.	SAB: 9, 22, 228 TG: 12, 29, 40, 77, 101, 110, 487
6.5.03 Read, write, recognize, and model equivalent representations of fractions, including improper fractions and mixed numbers.	SAB: 203, 204, 205, 206, 207, 208, 209, 210 TG: 416–417, 418–422, 423, 426–429, 430, 431, 433, 434, 435–436, 437, 439, 440, 441, 451 H/R: 117, 119, 121
6.5.04 Recognize, translate between, and model multiple representations of decimals, fractions less than one (halves, quarters, fifths, and tenths), and percents (0%, 25%, 50%, 75%, and 100%)	SAB: 416, 417, 418 TG: 900–901, 902, 903 H/R: 241
6.5.05 Read, write, recognize, and model decimals and their place values through thousandths.	SAB: 95, 96 TG: 164–165, 166, 167
6.5.06 Represent multiplication as repeated addition.	SAB: 1 TG: 2, 4, 61
Order and Compare Numbers	
6.5.07 Order and compare whole numbers up to 1,000,000.	TG: 181, 184, 186–187, 196
6.5.08 Order and compare decimals through hundredths.	TG: 172, 173 H/R: 47
6.5.09 Order and compare fractions having like or unlike denominators with or without models.	SAB: 187, 188 TG: 356–357, 359, 360, 361, 362, 401, 409, 457 H/R: 99
Number Line	
6.5.10 Identify and locate whole numbers, halves, and fourths, and thirds on a number line.	SAB: 195, 199, 203, 204 TG: 358–359, 390–391, 403, 407, 418–420

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Classifications of Numbers	
6.5.11 Solve problems involving descriptions of numbers, including characteristics and relationships (e.g., odd/even, factors/multiples, greater than, less than, square numbers).	SAB: 25, 53, 54 TG: 47, 72, 90–93, 95, 127 H/R: 27
Standards 6B, 6C – Computation, Operations, Estimation, and Properties	
6B: Investigate, represent and solve problems using number facts, operations (addition, subtraction, multiplication, division) and their properties, algorithms and relationships.	
6C: Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers.	
Number Operations	
6.5.12 Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers.	SAB: 119, 120, 144, 150, 151, 422 TG: 218, 219, 221, 268, 283, 288 H/R: 75, 79, 81
6.5.13 Solve problems and number sentences involving addition and subtraction of decimals through hundredths (with or without monetary labels).	SAB: 113, 115, 116, 119, 120 TG: 199–200, 204–205, 206, 207, 218, 219, 221 H/R: 55, 57
6.5.14 Model situations involving addition and subtraction of fractions.	SAB: 189, 190, 192, 195, 197, 200, 201 TG: 347–349, 353, 364, 365–366, 367, 370–371, 372, 373, 390–391, 392, 393, 396–397, 398, 399, 406, 410–411, 412, 413 H/R: 97, 109, 111
Properties	
6.5.15 Solve problems involving the commutative, distributive, and identity properties of operations on whole numbers (e.g., $37 \times 46 = 46 \times 37$, $270 \times 5 = (200 \times 5) + (70 \times 5)$).	SAB: 61, 62, 63, 123, 124 TG: 19–20, 83, 106–108, 109, 224–225, 226, 227
Estimation	
6.5.16 Make estimates appropriate to a given situation with whole numbers, fractions, and decimals.	SAB: 129, 256, 287, 289, 290 TG: 240–241, 243, 244, 459, 548, 614–615, 616, 620–621, 622, 623 H/R: 67
Standard 6D – Ratios, Proportions, and Percents	
Solve problems using comparison of quantities, ratios, proportions and percents.	
Identify and Express Ratios	
6.5.17 Identify and express ratios using appropriate notation (i.e., a/b , a to b), and identify equivalent ratios.	SAB: 399, 400, 401, 411, 427, 428 TG: 854–855, 856–857, 858, 859, 883, 884, 887, 889, 890, 925, 926 H/R: 229, 235

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Proportional Reasoning	
6.5.18 Solve problems involving proportional relationships, including unit pricing (e.g., one apple costs 20¢, so four apples cost 80¢).	SAB: 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414 TG: 862–866, 867–868, 869, 872–873, 874, 875, 876, 878–879, 880–881, 882, 883, 884, 886, 887, 888, 889, 893, 894, 895 H/R: 231, 233, 235, 237, 239
Percents	
6.5.19 Read, write, recognize, and model percents (0%, 25%, 50%, 75%, and 100%).	SAB: 415, 416, 417, 418, 419, 420, 421, 422 TG: 898–899, 900–901, 902, 903, 906–909, 910, 911 H/R: 241, 243
STATE GOAL 7 MEASUREMENT:	
Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.	
Calculators Allowed	
Standards 7A, 7B, 7C – Units, Tools, Estimation, and Applications	
7A: Measure and compare quantities using appropriate units, instruments and methods.	
7B: Estimate measurements and determine acceptable levels of accuracy.	
7C: Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.	
Elapsed Time	
7.5.01 Solve problems involving elapsed time in compound units.	SAB: 130 TG: 221, 242
Measurement Tools	
7.5.02 Select and use appropriate standard units and tools to measure length (to the nearest 1/4 inch or mm), mass/weight, capacity, and angles.	SAB: 85–86, 156, 157, 162, 163, 195 TG: 141, 155, 180, 261, 300, 301, 303, 306, 307, 309, 391, 497, 500, 502, 503 H/R: 109, 135
Area, Perimeter, and Circumference	
7.5.03 Solve problems involving the perimeter and area of a triangle, rectangle, or irregular shape using diagrams, models, and grids or by measuring or using given formulas (may include sketching a figure from its description).	SAB: 71, 72, 73, 76, 77, 83, 84, 85, 87, 88, 90 TG: 124, 125, 126, 127, 131, 132, 138–139, 140–141, 144, 145, 148, 149 H/R: 35, 37, 39, 41
Estimation	
7.5.04 Compare and estimate length (including perimeter), area, volume, weight/mass, and angles (0° to 180°) using referents.	SAB: 73, 90, 227, 230 TG: 126, 127, 135, 141, 148, 149, 152–153, 155–156, 157, 309, 486, 490, 500
Volume and Surface Area	
7.5.05 Determine the volume of a right rectangular prism using an appropriate formula or strategy.	SAB: 224 TG: 482, 483 H/R: 131

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Measurement Conversions	
7.5.06 Solve problems involving unit conversions within the same measurement system for time, length, and weight/mass, including compound units (e.g., 5ft 5in, 2lbs 2oz).	SAB: 91, 92, 99, 101, 130, 231, 232, 233, 234 TG: 152–153, 154, 157, 178–179, 181, 221, 242, 483, 494–495, 496, 497, 501, 502, 503, 574 H/R: 43, 135, 137
Indirect Measurements and Scale Drawings	
7.5.07 Solve problems involving map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).	SAB: 435–436 TG: 932–935, 936 H/R: 249
STATE GOAL 8: ALGEBRA: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.	
Calculators Allowed	
Standard 8A – Representations, Patterns, and Expressions Describe numerical relationships using variables and patterns.	
Patterns	
8.5.01 Determine a missing term in a sequence, extend a sequence, and identify errors in a sequence when given a description or sequence.	TG: 73, 285, 694, 695, 696, 697, 801
8.5.02 Construct and identify a rule that can generate the terms of a given sequence.	SAB: 27, 28 TG: 52, 53–54, 55, 56, 285, 788, 801
Write and Simplify Expressions	
8.5.03 Write an expression using variables to represent unknown quantities.	SAB: 9, 28, 145, 146, 147 TG: 12, 29, 53–54, 110, 272–274, 275
Evaluate Algebraic Expressions	
8.5.04 Evaluate algebraic expressions with a whole number variable value (e.g., evaluate $m + m + 3$ when $m = 4$).	SAB: 124 TG: 29, 49, 226
Standard 8B – Connections Using Tables, Graphs, and Symbols Interpret and describe numerical relationships using tables, graphs and symbols.	
Describing Change	
8.5.05 Demonstrate, in simple situations, how a change in one quantity results in a change in another quantity (e.g., input–output tables).	SAB: 27, 28 TG: 52, 53–54, 55, 56, 285, 488 H/R: 15
Coordinate System	
No benchmark expectations at this grade level.	

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Representations	
8.5.06 Translate between different representations (table, written, or pictorial) of whole number relationships.	SAB: 126, 132, 135, 331, 332, 333, 334 TG: 234–235, 248–249, 254–255, 680–681, 682, 683, 684, 685 H/R: 65, 69, 71, 185
Inequalities	
No benchmark expectations at this grade level.	
Standard 8C, 8D – Writing, Interpreting, and Solving Equations	
8C: Solve problems using systems of numbers and their properties.	
8D: Use algebraic concepts and procedures to represent and solve problems.	
Write Equations and Inequalities	
8.5.07 Represent problems with equations and inequalities.	SAB: 14, 49, 50, 59, 60, 145–147 TG: 5, 7, 27, 29, 54, 76–77, 78, 79, 98–101, 272–275 H/R: 23, 77
Solve Equations and Inequalities	
8.5.08 Solve for the unknown in an equation with one operation (e.g., $2+n=20$, $n\div 2=6$).	SAB: 9, 22, 145–147 TG: 12, 29, 40, 272–276 H/R: 11, 13, 77
8.5.09 Solve word problems involving unknown quantities.	SAB: 22, 49, 50, 52, 145, 146, 147 TG: 40, 76–78, 84, 272–274, 275 H/R: 11, 13, 15, 23, 25, 77
STATE GOAL 9: GEOMETRY	
Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.	
Calculators Allowed	
Standard 9A – Properties of Single Figures and Coordinate Geometry	
Demonstrate and apply geometric concepts involving points, lines, planes and space.	
Properties of Single Figures	
9.5.01 Classify, describe, and sketch two-dimensional shapes (triangles, quadrilaterals, pentagons, hexagons, and octagons) according to the number of sides, length of sides, number of vertices, and interior angles (right, acute, obtuse).	SAB: 167 TG: 313–314, 315, 316
9.5.02 Identify and describe three-dimensional shapes (cubes, spheres, cones, cylinders, prisms, and pyramids) according to their characteristics (faces, edges, vertices).	SAB: 371, 372, 373, 379, 381, 382, 383 TG: 808, 809, 810, 812, 813, 816–818, 819, 821 H/R: 217, 219
9.5.03 Solve problems using properties of triangles (e.g., sum of interior angles of a triangle is 180°).	SAB: 161, 162 TG: 306–307, 309 H/R: 85

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Circles	
9.5.04 Identify, describe, and sketch circles, including radius and diameter.	SAB: 179, 180 TG: 336–337, 338, 339 H/R: 95
Coordinate Geometry	
9.5.05 Graph, locate, identify points, and describe paths using ordered pairs (first quadrant).	SAB: 327, 328, 329, 330 TG: 672–673, 674, 675, 676, 677 H/R: 183
Symmetry	
9.5.06 Identify whether or not a figure has one or more lines of symmetry, and sketch or identify all lines of symmetry.	SAB: 173, 175 TG: 324, 326, 327 H/R: 91
Transformations	
9.5.07 Identify, describe, and predict results of reflections, translations, and rotations of two-dimensional shapes.	SAB: 319, 320, 321, 328, 329 TG: 666, 667, 668, 669, 674, 675, 677, 691 H/R: 181, 183, 187
Lines, Segments, Rays, and Angles	
9.5.08 Identify and sketch parallel, perpendicular, and intersecting lines.	SAB: 155 TG: 298–299
9.5.09 Identify and sketch acute, right, and obtuse angles.	SAB: 158, 167, 169, 170 TG: 301–302, 313–314, 318–19, 321 H/R: 89
Standard 9B – Relationships Between and Among Multiple Figures Identify, describe, classify and compare relationships using points, lines, planes and solids.	
Relationships Between Two- and Three-Dimensional Objects	
9.5.10 Identify the two-dimensional components of a three-dimensional object.	SAB: 372, 373, 374, 375, 381, 382, 383, 384 TG: 809, 810, 811, 812, 813, 817, 818, 819, 820 H/R: 217, 219
9.5.11 Identify a three-dimensional object from its net.	SAB: 373, 383 TG: 810, 813, 818, 819 H/R: 219
Composing and Decomposing Figures	
9.5.12 Predict the result of composing or decomposing shapes or figures.	SAB: 386 TG: 825–826 H/R: 221

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Congruency and Similarity	
9.5.13 Identify congruent and similar figures by visual inspection.	SAB: 165 TG: 312, 315, 924, 929 H/R: 87
9.5.14 Determine if figures are similar, and identify relationships between corresponding parts of similar figures.	SAB: 427, 428, 429, 430 TG: 925, 926, 927, 928, 929 H/R: 247
Distance	
9.5.15 Determine the distance between two points on a horizontal or vertical number line in whole numbers.	SAB: 328 TG: 674
Standard 9C – Justifications of Conjectures and Conclusions Construct convincing arguments and proofs to solve problems. <i>This standard is not assessed in isolation. Rather, its essence is assessed indirectly through problems that require this type of thinking.</i>	
Standard 9D – Trigonometry Use trigonometric ratios and circular functions to solve problems. <i>This standard is not assessed on the state assessment until grade 11.</i>	
STATE GOAL 10: DATA ANALYSIS, STATISTICS, AND PROBABILITY Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty-using concepts of probability.	
Calculators Allowed	
Standards 10A, 10B – Data Analysis and Statistics 10A: Organize, describe and make predictions from existing data. 10B: Formulate questions, design data collection methods, gather and analyze data and communicate findings.	
Read and Interpret Displays	
10.5.01 Read, interpret, and make predictions from data represented in a pictograph, bar graph, line (dot) plot, Venn diagram (with two circles), chart/table, line graph, or circle graph.	SAB: 19, 125, 131, 133, 134, 137, 138, 140, 177, 214 TG: 34, 233, 246–247, 252–253, 258, 259, 260, 261, 330–331, 334, 448 HR: 69, 71, 73, 93
Complete and Create Displays	
10.5.02 Create a pictograph, bar graph, chart/table, or line graph for a given set of data.	SAB: 126, 132, 135, 138, 214 TG: 35, 36, 74, 234, 235, 248, 249, 250, 254, 255, 256, 259, 261, 262, 286, 381, 448 H/R: 65, 69, 71, 73
Line of Best Fit No benchmark expectations at this grade level.	
Statistics	
10.5.03 Determine the mode, range, median (with an odd number of data points), and mean, given a set of data or a graph.	SAB: 152, 279, 286 TG: 290, 596, 610, 611

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Standard 10C – Probability Determine, describe and apply the probabilities of events.	
Probability	
10.5.04 Solve problems involving the probability of a simple event, including representing the probability as a fraction between zero and one.	SAB: 211, 212, 213 TG: 442–444, 445–447, 449
Outcomes and Counting Principles	
10.5.05 Apply the fundamental counting principle in a simple problem (e.g., How many different combinations of one-scoop ice cream cones can be made with 3 flavors and 2 types of cones?).	SAB: 13, 22, 51 TG: 26, 29, 40, 82–83, 87, 88